

bird is nowhere so abundant as about Phillip's Station, on the summit. Here this peerless singer was heard occasionally through the day but more often at dusk. I found a nest, built principally of rootlets, placed in a small tamarack 6 feet up, along the road east of Phillip's Station on July 3, 1902. It contained three rather pale blue eggs in which incubation had just begun. I discovered two other nests the same day, one along the road, 6 feet up in a tamarack, with four small young; the other was found deep in the woods, artfully placed among the branches of a dead tamarack, and held four large young. In the last two cases the parents were reluctant to leave the nest, and hopped about the branches near by, showing great anxiety and settled down on the nest immediately after we left.

107. *Merula migratoria propinqua*. WESTERN ROBIN. — As usual in the Sierras the robin was the most common bird of its size, in Lake Valley as well as up to 8000 feet altitude. It begins to lay in the Lake Valley about the first of June, and a little later or earlier at other points, according to the altitude.

108. *Hesperocichla nœvia*. VARIED THRUSH. — Mr. Price collected a specimen on Silver Creek, Oct. 1, 1896.

109. *Sialia arctica*. * MOUNTAIN BLUEBIRD. — Very common in Lake Valley. I found nine nests one day on a ramble near Bijou, all placed in dead trees or stumps, from 3 to 15 feet up. After the first week in June nests contained partly incubated eggs, although an occasional late nest was found. The Western Robin, Western Chipping Sparrow and the Mountain Bluebird are the three commonest birds in the pine woods, and although the latter is last on this list it is by no means the least interesting bird in the region.

FOOD HABITS OF SOME WEST INDIAN BIRDS.

BY B. S. BOWDISH.

SO FAR as I have noticed, few writers have given much attention to the extent to which many birds of families which in the States are considered more or less strictly insectivorous, feed in the West Indies largely on fruit and seeds.

In 'The Auk' for October, 1902, Mr. John Grant Wells mentions *Vireo calidris* as feeding more or less on small red berries, and occasional mention of other cases may be found.

In Porto Rico the woodpecker, *Melanerpes portoricensis*, forms

about half its bill of fare of fruit and seeds. The Gray Kingbird, *Tyrannus dominicensis*, sometimes gleans more than half of its living from vegetable substances; *Pitangus taylori* feeds about as largely on fruit, etc.; *Myiarchus antillarum* and *Blacicus blancoi* also feed quite largely on such matter. These species constitute the list of native flycatchers.

In Cuba three Woodpeckers — *Xiphidiopicus percussus*, *Melanerpes superciliaris*, and *Colaptes chrysocaulosus* — according to the stomachs that I have examined, subsist on a diet not more than one third of which is insectivorous.

Two native Vireos of Porto Rico, *V. talidris* and *V. latimeri*, feed to some extent on vegetable matter, and at times half or more of the food of the former is vegetable.

Finally, Warblers coming to Cuba and Porto Rico from the States for the winter were found to eat more or less weed seed and in some cases to feed very largely on it.

In these islands, teeming with insect life, it seems a little remarkable, even considering the temptation afforded by abundance of fruit, that birds habitually considered insectivorous should feed on vegetable matter to the extent of almost completely changing their normal food habits, and I have no explanation to account for it.

Following is the result of examinations of a few stomachs:

Melanerpes portoricensis. ♂ and ♀, July 2, seeds and buds with a small percentage of insect matter; ♀, Dec. 13, seeds and remains of worms; ♀, Dec. 28, seeds; ♀, April 8, insects; ♀, April 22, seeds and remains of spiders; ♀, two seeds and small insects; ♂, Aug. 3, insects; 4 specimens (3 ♀ and 1?), May 26, one beetles, others seeds and remains of fruit; ♀, May 30, beetles and other insects; ♀, June 27, dragonfly; ♂, Sept. 6, insects and seeds.

Tyrannus dominicensis. ♂ and ♀, July 2, small shells and coleoptera; ♀, Oct. 4, insects, chiefly coleoptera; ♂, Jan. 18, a few small berries from trees; ♀, Jan. 20, one large berry-seed and remains of insects; ♀, Jan. 24, berries and insects; ♂ and ♀, Jan. 26, seeds and insects; ♀, Jan. 27, seeds and insects; ♂, Jan. 28, insects and seeds; ♀, Jan. 29, insects.

Myiarchus antillarum. ♀, July 21, seeds and coleoptera; ♀, Jan. 18, wasps; sex? July 1, beetles and seeds of small fruit, ♂, July 11, worm; ♀, March 1, fruit and beetles; ♂, June 26, seeds of small fruit and one beetle; ♂, July 18, seeds of berries; ♀, a few seeds and large quantity of coleoptera; ♀, Sept. 5, seeds of a small yellow fruit and one beetle; ♀,

Sept. 19, five seeds and a beetle; ♂, Oct. 5, large white grub and other insects; ♀, Oct. 15, several seeds of small fruit and wasps; ♀, Oct. 19, two thirds berries and one third insects.

Blacicus blancoi. ♂, Feb. 3, beetles; ♂, Feb. 10, beetles; ♀, May 30, flies; ♂, June 2, beetles; ♀, June 25, beetles; ♀, July 15, beetles; ♀, July 18, insects and remains of berries; ♂, seeds of berries; ♂, July 21, beetles; ♂, July 27, beetles; ♂, July 31, beetles; ♂, Aug. 3, insects; ♀, Aug. 25, flies and millers; 2 ♂ and 1 ♀, Aug. 30, beetles; 2 ♂, Sept. 2, insects; ♀, Sept. 3, beetles; ♂, Sept. 14, beetles; ♀, Sept. 15, beetles; ♂ and ♀, Sept. 22, beetles; ♂, Sept. 23, beetles; ♂, Oct. 16, beetles.

Vireo calidris. ♂, July 2, insects; ♂, May 27, insects; ♀, July 1, almost entirely seeds of small fruit; ♀ juv., May 30, legs of beetle; ♂, May 30, insects and seeds of a small red fruit; ♂, July 14, insects; ♂, July 17, small fruit remains; ♀, Sept. 28, insects.

Vireo latimeri. ♂, ♀ and juv. ♂, Apr. 1, insects and in juv. small centipede; ♂, Apr. 22, insects; ♂ juv. July 17, grasshopper and small red berries and seeds; ♂ and ♀, July 26, insects and small fruit seeds; ♂, Aug. 1, chiefly seeds; ♂ juv., Sept. 5, worm and insects; ♂ juv., Sept. 14, insects; ♂, Sept. 17, large tree seed and several beetles; ♂, Sept. 18, cricket and five tree seeds; ♂, Sept. 23, flies and worm; ♂, Sept. 25, small worms; ♂, Sept. 26, small hairy caterpillars; ♂ and ♀, Sept. 27, beetles and one seed; ♀, Oct. 9, 10 small black seeds and trace of insects; ♂, Oct. 10, yellow berries and legs of insects.

I also found seeds in the stomachs of the Black and White, Parula, Myrtle, Palm, and Prairie Warblers, particularly the Myrtle and Palm, the latter feeding almost exclusively on seeds of weeds, near Santiago and Guama, Cuba.

This would appear largely to eliminate the question of food supply from the problem of causes of bird migration.